

2003-04 AUTOMATIC TRANSMISSION

Overhaul - New Beetle, 02E

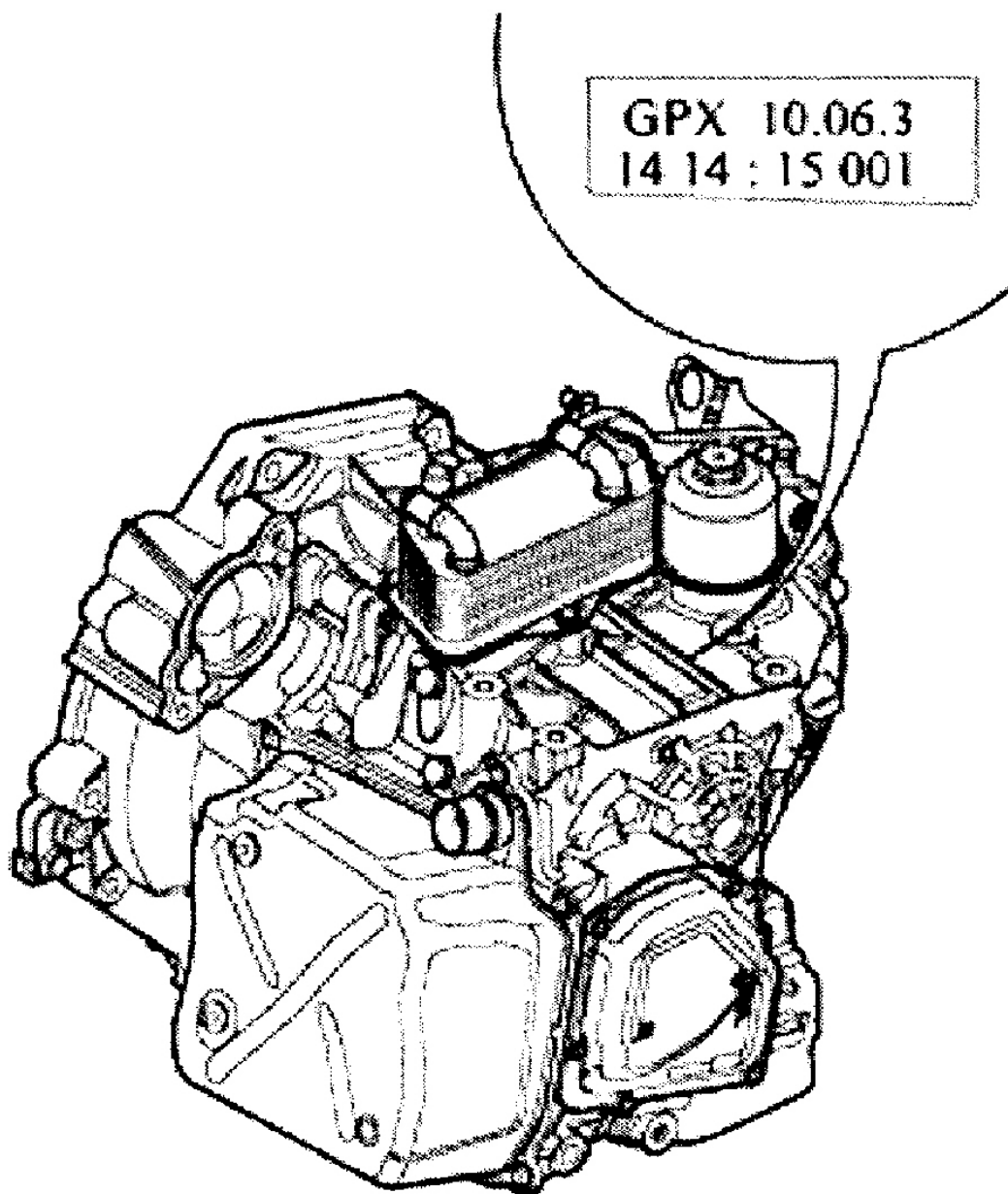
APPLICATION

TRANSMISSION APPLICATION

Application	Transmission Model
1.9L (2003-2004)	02E, 6-Speed

IDENTIFICATION

Transmission code letters are given on bottom of transmission, near oil cooler. See **Fig. 1** . Transmission code letters are also given on vehicle data stickers.



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Fig. 1: Locating Transmission Identification Code
Courtesy of VOLKSWAGEN UNITED STATES, INC.

CODE LETTERS, TRANSMISSION APPLICATION, RATIOS, EQUIPMENT

Automatic transmission		6-speed 02E
Identification code		GPX
Manufactured from to		08.03
Assignment	Model	New Beetle 1999 ➤
	Engine	1.9 l - 74 kW Turbo-diesel
Transmission ratios: $Z_2 : Z_1$	Final drive I for 1st to 4th speed	70 : 16 = 4.375
	Final drive II for 5th/6th and reverse gear	70 : 21 = 3.333
	st. gear	45 : 13 = 3.462
	2nd gear	41 : 20 = 2.050
	3rd gear	39 : 30 = 1.300
	4th gear	37 : 41 = 0.902
	5th gear	32 : 35 = 0.914
	6th gear	31 : 41 = 0.756
	Reverse	33 : 13 x 22 : 14 = 3.989

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Fig. 2: Transmission Code GPX
Courtesy of VOLKSWAGEN UNITED STATES, INC.

DESCRIPTION & OPERATION

TRANSMISSION

The 6 Spd. Direct Shift Automatic Transmission 02E is also called double-clutch transmission. The engine torque is initiated via the two-mass flywheel into the transmission. The transmission is built up like a 6-speed manual transmission. By alternating sequence of the hydraulic activation of two multi-plate wet clutches, it is operated like an automatic transmission, that means the speeds are selected automatically or manually via Tiptronic mode. A clutch pedal is not installed.

SAFETY FUNCTIONS OF TRANSMISSION CONTROL MODULE

If one or more components or sensors fail the Transmission Control Module (TCM) -J217- activates the corresponding functions or emergency programs. This ensures a transmission operation without damage which

could have effects on gearshift function and quality.

GEAR CHANGE POINT VARIATIONS FOR HILLS

An additional gear change map automatically selects gear changes for hills dependent upon accelerator pedal position and driving speed.

- Gear change map for extreme uphill stretches, is matched to engine output.
- Gear change map for extreme downhill stretches, is matched to braking effect of the engine.
- By selecting a gear directly via Tiptronic the engine braking effect can be exploited also with a specific gear selected, such as when you have gradients in the trailer mode.

LUBRICATION & ADJUSTMENTS

For lubrication and adjustments, see **SERVICING - A/T (02E)** article in TRANSMISSION SERVICING.

ON-VEHICLE SERVICE

AXLE SHAFTS

For information on axle shaft, see **AXLE SHAFTS** article in DRIVELINE/AXLES.

TRANSMISSION COMPONENTS

For information on components serviceable while transmission is installed in vehicle, see **SERVICING - A/T (02E)** article.

APPLY & BRAKE CLUTCH APPLICATION

Manufacturer does not provide specific information for apply and brake clutch application.

REPAIR INSTRUCTIONS

The maximum possible care and cleanliness and proper tools are essential to ensure satisfactory and successful transmission repairs. The usual basic safety precautions naturally also apply when performing servicing work.

A number of generally valid instructions for various repair procedures, which are mentioned at various points in the Repair Manual; are summarized here.

BATTERY DISCONNECTING & RECONNECTING

CAUTION: Before beginning repairs on the electrical system:

- Obtain anti-theft radio security code.

- **Switch off all electrical consumers.**
- **Switch ignition off and remove ignition key.**
- **Do not loosen or remove ground strap from body. Disconnect terminal from battery only.**

For work steps required after reconnecting battery, see **Fig. 3** .

Work steps	completed?
Diagnostic Trouble Code (DTC) Memory: Check using VAS 5051 Tester in mode "Guided Fault Finding".	
Power windows (where applicable): Completely open and close all power windows.	
Radio: Input anti-theft radio code and check radio, CD & tape player functions as applicable.	
Clock: Check and reset to local time.	
All electrical consumers: Check function.	

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Fig. 3: Reconnecting Battery Work Steps
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE: If desired, print this page and use the table above as a checklist.

RULES FOR CLEANLINESS WHEN WORKING ON TRANSMISSION

- Do not run engine or tow vehicle with oil pan removed or without gear oil.
- Carefully clean all joints and adjacent areas before disconnecting.
- When installing transmission make sure that the dowel sleeves between engine and transmission are seated correctly.
- Place parts that have been removed on a clean surface and cover so that they are not soiled. Use sheeting and paper. Do not use fluffy cloths!
- Only install clean components: Unpack replacement parts immediately prior to installation.
- Carefully cover opened components or seal if repairs cannot be carried out immediately.

O-RINGS, OIL SEALS, GASKETS

- Always replace O-rings, oil seals and gaskets.
- After removing seals/gaskets, examine the contact surfaces on housings or shafts for burrs and signs of damage and repair before reinstalling.
- Before installing a radial shaft seal lubricate the outside diameter with gear oil and fill the space between the sealing lips (arrow) halfway with G 052 128 A1.
- The open side of an oil seal faces towards the oil.
- Always use transmission oil. Other lubricants will cause the hydraulics to malfunction.
- Check gear oil level after installing and if necessary top off. See **SERVICING - A/T (02E)** article.

NUTS, BOLTS

- Loosen and tighten nuts, bolts/screws for securing covers and housings in a diagonal sequence.
- Do not tilt the very sensitive parts and also loosen and tighten in a diagonal sequence.
- The torque settings indicated refer to non-lubricated screws and bolts:
- Threads of bolts/screws that are secured by locking fluid are to be cleaned with a wire brush. Then insert bolts/screws with AMV 185 100 A1.
- All threaded holes where locking fluid is applied must be cleaned with a thread tap to remove remnants of locking fluid. Otherwise there is a danger that a bolt/screw will shear when reinstalling.
- Replace self-locking nuts.

OVERHAUL

Manufacturer does not provide overhaul procedures or specifications. For fluid capacities and types, adjustment or servicing procedures, see **SERVICING - A/T (02E)** article. For removal and installation procedures, see **REMOVAL & INSTALLATION - A/T (02E)** article.